133-8-2/28

AUTHORS: Andon'yev, S.M. (Cand.Tech.Sci.), Filip'yev, O.V. and Kudinov, G.A. (Engineers).

TITLE: An investigation of the wear of blast furnace hearths and the choice of design for their air cooling system. (Issledovaniye razgara leshchadey i vybor konstruktsiy dlya ikh vozdushnogo okhlazhdeniya).

PERIODICAL: "Stal'" (Steel), No.8, 1957, pp.685-690 (USSR).

ABSTRACT: In previous investigations on the determination of the temperature distribution in a blast furnace hearth the heat conductivity of the refractory lining was assumed as being constant. However, in fact the hearth lining in time becomes saturated with iron, so that its conductivity increases 4-5 times. The hearth of the No.2 furnace in "Svobodnyy Sokol" Works after blowing out of the furnace was investigated, its lines are shown in Fig.1 and the results of tests carried out on samples of refractories are given in Table 1 (the work was carried out by the All Union Institute of Refractories in Kharkov). The heat conductivity of the refractory bricks affected by service depends strongly on their porosity and iron content (Fig.2). In order to obtain the distribution of temperatures in a blast furnace hearth taking into consideration the heat conductivities of affected refractories the authors carried

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An investigation of the wear of blast furnace hearths and the choice of design for their air cooling system. (Cont.)

out an investigation using electrical resistance modelling (TsINN, MChM, Information No.443, Metallurgizdat, 1956). The following engineers participated in the work: B.I.Birman and V.K.Maystrenko. The temperature on the boundary of liquid iron and lining was assumed 1400 C and that on the boundary and coolers 20 C. For simplification the lining was divided into two layers - layer affected by service and unaffected layer; the boundary temperature was assumed 1150 C. The following heat transfer coefficients were taken: chamotte lining - 1.5; affected chamotte lining 4.3; carbon blocks 6.0 and concrete 1.0. The design of 4 types of furnace hearths were studied: No.2 furnace (volume 600 m^3) on the "Svobodnyy Sokol" Works, No.4 furnace on the Magnitogorsk Combine (volume 1180 m^3), a typical furnace of 1033 m^3 and a typical furnace of 1386 m^3. The results of investigations are given in Tables 2 and 3 and Figs. 3 and 4. It is pointed out that indications of thermocouples placed in the hearth of typical furnaces (Fig.4) on the boundary with the furnace foundations (i.e. 7-8 m from the top of lining) are not suitable for the assessment of the wear of the lining. Thermo-

An investigation of the wear of blast furnace hearths and the choice of design for their air cooling system. (Cont.)

couples should be placed on the boundary of the heat resistance concrete, no more than 4 m from the top of the hearth. The dependence of the temperature measured at a distance of 4.2 m from the top of the hearth along its axis on the wear of lining for various furnaces is shown in Fig.5. For the determination of the wear of lining on the basis of temperature at a given point in the hearth the following empirical formula is proposed:

$$x = \frac{1400 - T}{350 - 0.1\,V}$$

where x = thickness of the remaining lining, m; T = temperature on the axis of the hearth at a depth of 4.2 m, ^{o}C; V = volume of the furnace, m^3. The comparison of calculated and determined temperatures for No.4 MMK furnace, illustrating the applicability of the above formula is given in Table 4. The wear of the above hearth on blowing out of the furnace is shown in Fig.6. A nomogram for calculating the wear of lining in hearth from indications of thermocouples for the above furnace is shown in Fig.7. On the basis of the results obtained it is concluded that air cooling of the hearth will decrease the

An investigation of the wear of blast furnace hearths and the choice of design for their air cooling system. (Cont.)

penetration of iron. Two designs of air cooling, shown in Figs.8 and 9 are proposed. The amount of air required for cooling is 36 000 m^3/hr.

There are 4 tables and 9 figures.

ASSOCIATION: Giprostal'.

AVAILABLE: Library of Congress

Card 4/4

Sov/133/58-9-2/29

AUTHORS: Andon'yev, S. M. (Cand.Tech.Sciences), Kudinov, G. A. (Engineer), Filip'yev, O. V. (Engineer)

TITLE: Some New Designs of Cooling Systems for Blast Furnaces (Novyye konstruktsii dlya okhlazhdeniya domennoy pechi)

PERIODICAL: Stal', 1958, Nr 9, pp 776-780 (USSR)

ABSTRACT: On the basis of a large experimental and design work (not specified) carried out by Giprostal', some new designs of cooling systems for blast furnaces are outlined. The designs were prepared for a typical furnace of 1033 m^3 working volume. Characteristic features: Cooling of the blast furnace stack is proposed in two modifications: 1) cooling with continuous vertical plate coolers with ring supports in each row (for supporting lining). A thin stack lining with a proportional widening of the bottom part of the furnace and the throat is recommended. This can increase the working volume of the furnace by 25-30%. Coolers are joined into vertical sections (four tubes are cast in each plate cooler - Fig.2A); 2) cooling with vertical plate coolers (Fig.2B) with supporting rings in order to give a firm support to the lining (Fig.3). The coolers are placed in a check pattern, 24 in a row, and together with supporting rings

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Some New Designs of Cooling Systems for Blast Furnaces

divide the lining into independent sectors. Supporting rings are placed at an angle of 5-10° to the horizontal plane, so that the descending burden will prevent falling out of the individual bricks and partially fill up burned out sections of brickwork (self-lining furnace). The bosh is cooled with plate coolers with ribs (Fig.4) forming cells which on erosion of the lining can be filled with the slagged burden materials. A special L-shaped cooler is also proposed for the protection of the lintel (Fig.5). Coolers are joined in vertical sections. Tuyere cooling: the cooling space is divided by a plate into two longitudinal sections, communicating at the tuyere nozzle. Screw-like ribs are welded to the dividing plate (Fig.6). In this way the speed of water current can be increased to 1.5-2.0 m/sec as against 0.05-0.10 m/sec in the tuyeres used at present.
Hearth: Some modifications in the construction of the hearth bottom are outlined (Figs.7, 8). Air cooling of the bottom of the hearth is recommended. The overall cooling

Some New Designs of Cooling Systems for Blast Furnaces

of the furnace is shown in Fig.1: A - with a thick stack lining, B - with a thin stack lining. There are 8 figures and no references.

ASSOCIATION: Giprostal'.

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SOV/133-60-1-6/30

AUTHORS: Andon'yev, S. M. (Doctor of Technical Sciences), Kudinov, G. A., Filip'yev, O. V. (Engineers)

TITLE: Study of Performance of Blast Furnaces With Stack Coolers of Various Designs

PERIODICAL: Stal', 1960, Nr 1, pp 23-28 (USSR)

ABSTRACT: A report concerning the 1958 investigation by the State Institute for the Design and Planning of Steel Industry (GIPROSTAL'), with participation of plant personnel of three metallurgical plants (not identified): I (furnaces IA-ID), II (furnaces IIA and IIB), and III (furnace IIIA) of following volume (m^3): furnace IA-943; IB-1386; IV-1386; IG-1386; ID-1386; IIA-1033; IIB-1033; IIIA-1386. The methods of cooling the stacks of these furnaces is shown in Fig. 1. The design features of the furnaces; measuring the heat losses by the stack with water cooling; the effect of coolers on the temperature of gas flow; the analysis of furnace performance with coolers of various designs; the selection of cooler's design and the

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Study of Performance of Blast Furnaces With Stack Coolers of Various Designs

SOV/133-60-1-6/30

thickness of stack lining are discussed. A recommended optimum design of a typical blast furnace is given in Fig. 4. The authors arrived at the following conclusions: (1) The vertical peripheral coolers of stack, installed as continuous belts tight against blast furnace shell, are recognized to be the best. Though the stack heat losses with these coolers (with maximum burning out of the lining) in the average are 20% higher than that in the case of horizontal or "bracket type" coolers, the analysis of furnace performance showed no negative effect of plate type coolers on coke consumption and furnace output. (2) The peripheral plate type coolers are reliable and protect the blast furnace shell from heating, which eliminates the necessity of external spraying (in the case of continuous belts, set tight against the furnace shell, without gaps). Their life is 4 to 5 times higher than that of horizontal or "bracket type" coolers. (3) The thickness of stack lining, when plate type coolers are installed, should be reduced to 575 mm. (4) In the event the coolers are equipped with

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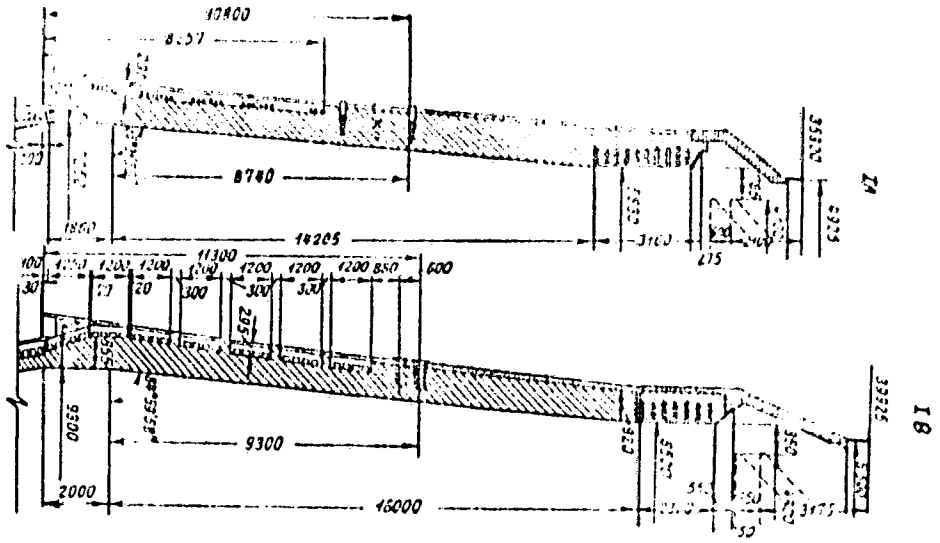

Fig. 1 (cont'd)

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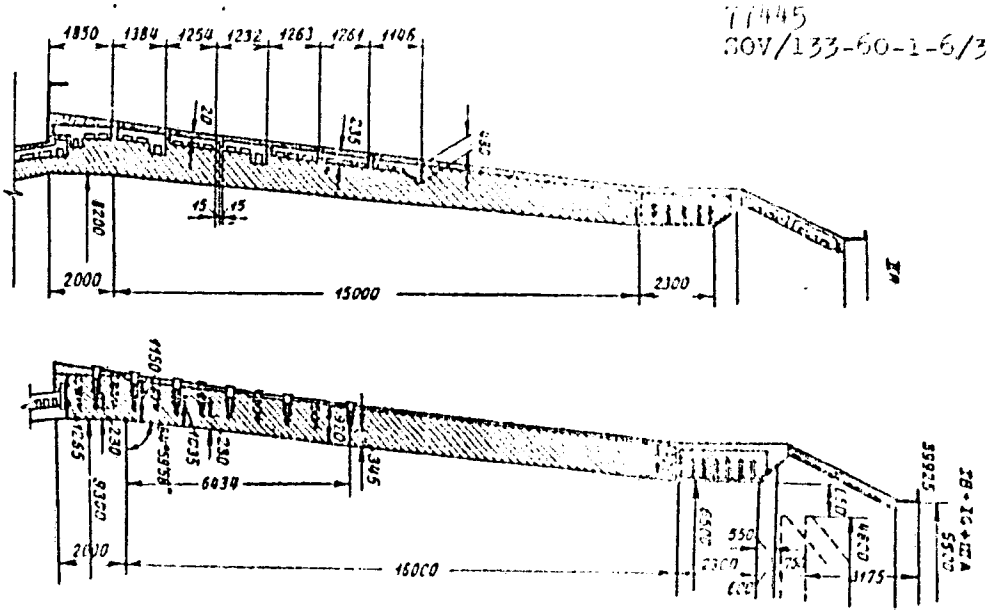

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Fig. 1 (cont'd)

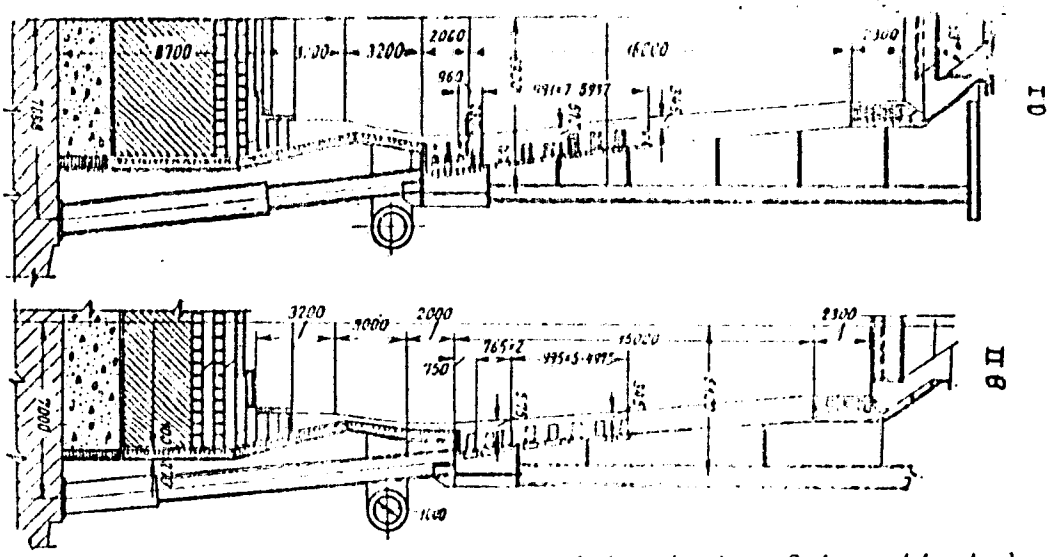

Fig. 1. The cooling systems used in stacks of investigated blast furnaces.

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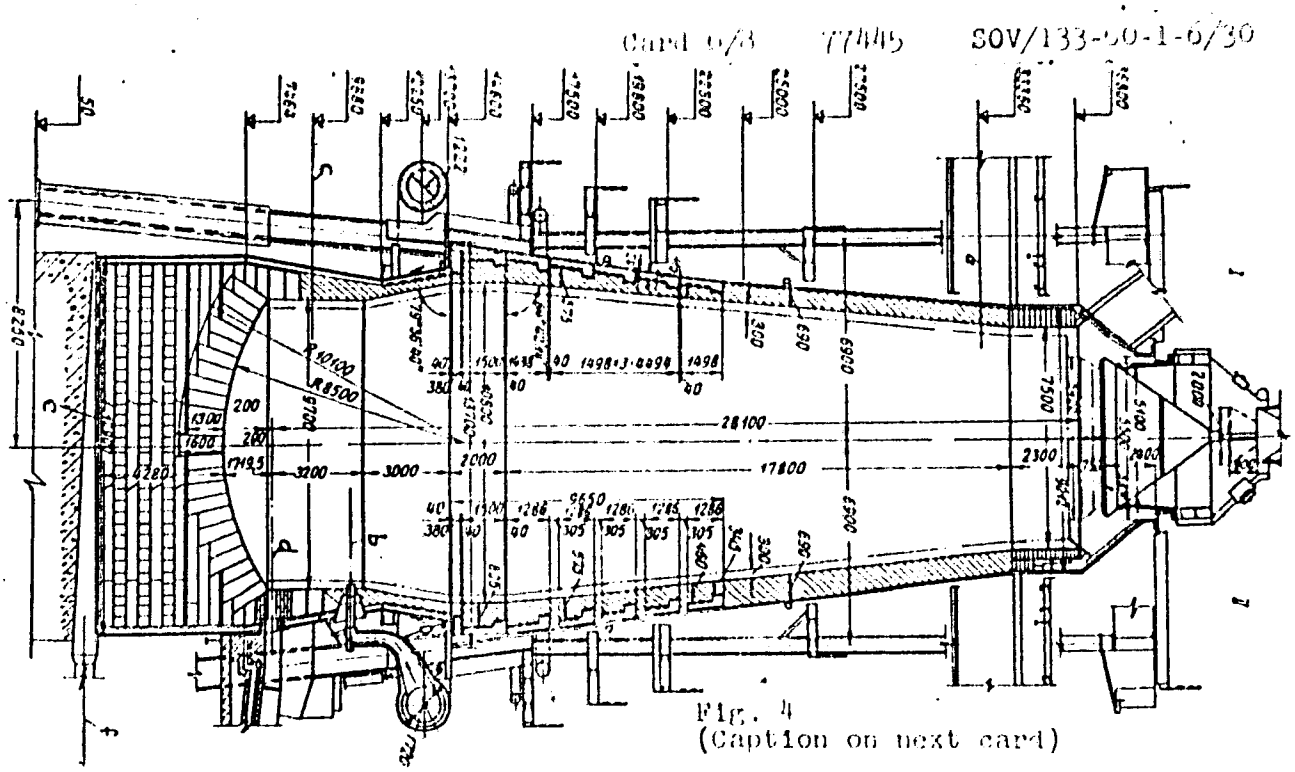

Fig. 4
(Caption on next card)

Caption to Fig. 4.

Fig. 4. Recommended design for the increase of working volume of a typical blast furnace from 1719 to 1960 m^3. (I) an alternate design showing an installation of plate type coolers (continuous belts); (II) an alternate design showing an installation of coolers with gaps along the height; (a) axis of pipe for taking gas amples; (b) axis of air tuyere; (c) axis of slag notch; (d) axis of iron notch; (e) metal stock; (f) ventilating blast.

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supporting shelves, the life of lining should increase. (5) Due to the fact that plate type coolers work under difficult conditions of slag hardened on the walls of blast furnace, it is recommended to cast them from the alloyed, growth resistant cast iron of ZhChKh -2,5 type. Following dimensions of plate type coolers are recommended: thickness of ribbed portion of cooler--115 to 150 mm; thickness of the main metal part of cooler--120 mm. The poured-in fire clay should not occupy more than 55% of cooler's surface. For cooling of the bosh the ribbed coolers without poured fire clay are recommended. The height of the rib should be about 75 mm. The ribs of the plate type coolers should have the longitudinal and transverse slots for the relief of thermal stresses. There are 4 figures; and 5 tables.

ANDON'YEV, S.M.; FILIP'YEV, O.V.; KUDINOV, G.A.

Increasing the durability of blast furnace hearth bottoms.
Metallurg 8 no.7:9-11 Jl '63. (MIRA 16:8)

1. Gosudarstvennyy institut po proyektirovaniyu predpriyatiy po proizvodstvu stali.
(Blast furnaces—Design and construction)

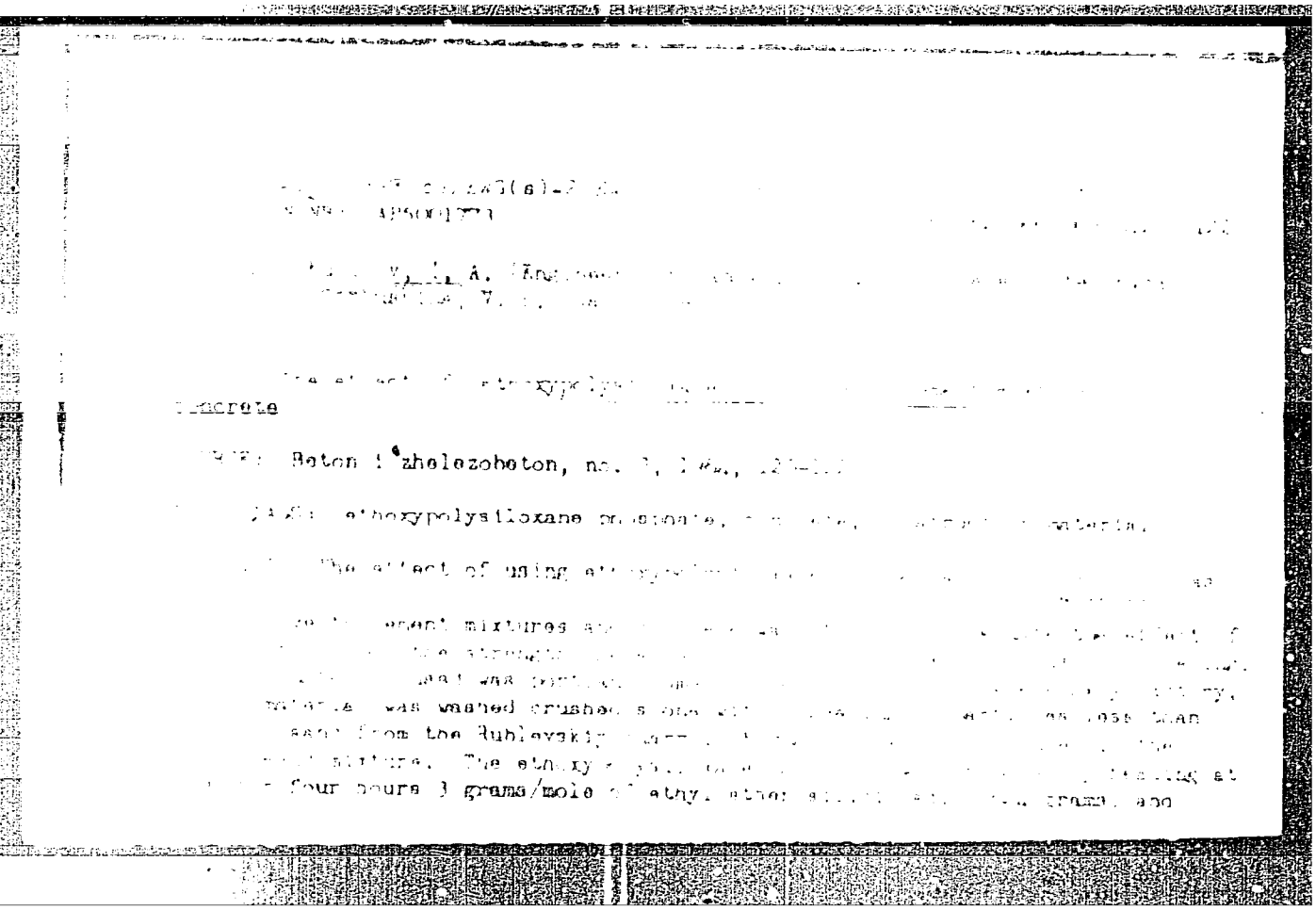
ANDREYEV, Aleksey Vladimirovich, doktor tekhn. nauk; ANCHAROV, Il'ya Leonidovich, inzh.; KUDINOV, Georgiy Pavlovich; SMIRNOV, A.A., retsenzent; LYUBIMOV, N.G., red. izd-va; MINSKER, L.I., tekhn. red.; IL'INSKAYA, G.M., tekhn. red.

[Automatic control of open-pit mine transportation] Avtomatizatsiia kar'ernogo transporta. Moskva, Gosgortekhizdat, 1963. 253 p. (MIRA 16:10)
(Strip mining--Equipment and supplies)
(Mine haulage) (Automatic control)

KUDINOV, G.P.; SHCHELKOV, G.K., inzh.

Networks for checking the occupancy of track circuits. Avtom., telem. i svyaz' 9 no.10:30-31 O '65. (MIRA 18:11)

1. Gosudarstvennyy proyektno-konstruktorskiy i nauchno-issledovatel'skiy institut Giprougleavtomatizatsiya.



concrete

Beton i zhelezobeton, no. 7, 1965, 23-25

ethoxypolysiloxane

mixtures

was washed crushed

from the Rublevskiy

mixture. The ethoxy

four hours 3 grams/mole

ACC NR: AP5001773

...gram/mole of phosphoric anhydride (1A) (trans). The steps in preparing the ... are given. The effect ...

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: MT

NO REF SOV: 003 OTHER: 001

Card 2/2

KUDINOV, I.A.

Apiary of the Secondary School. Biol. v shkole no.2:84 Mr-Ap '59.
(MIRA 12:4)

1. Omskaya oblastnaya stantsiya yunnatov.
(Kamyshino-Kurskoye--Bee culture--Study and teaching)

KUDINOV, I.A., inzh.; KIKAVA, O.Sh., inzh.

Some defects in the design of the SM-806 mixer. Mekh. stroi. 20 no.6:16 Je '163. (MIRA 16:5)

(Mixing machinery)

KUDINOV, I.M.; KUKUA, V.Ye.

Gastric phlegmon terminating recovery. Vest.khir.76 no.8:127 S'55
(MLRA 8:11)

1. Iz khirurgicheskogo otdeleniya Velikolukskoy oblastnoy bol'nitsy.
(STOMACH--INFLAMMATION)

KUDINOV, I.M.

Lymphangioma of the mesentery. Khirurgiia Supplement:17 '57.
(MIRA 11:4)

1. Iz Velikolukskoy oblastnoy bol'nitsy.
(MESENTERY--TUMORS)

KUDINOV, I.M.

Rupture of the bladder combined with fracture of the pelvic bones. Urologiia 22 no.2:52-53 Mr-Ap '57. (MLRA 10:7)

1. Iz vtorogo khirurgicheskogo otdeleniya Velikolukskoy oblastnoy bol'nitsy (glavnyy vrach - zasluzhennyy vrach Latviyskoy SSR A.K.Glushkov).
(BLADDER--RUPTURE) (PELVIS--FRACTURE)

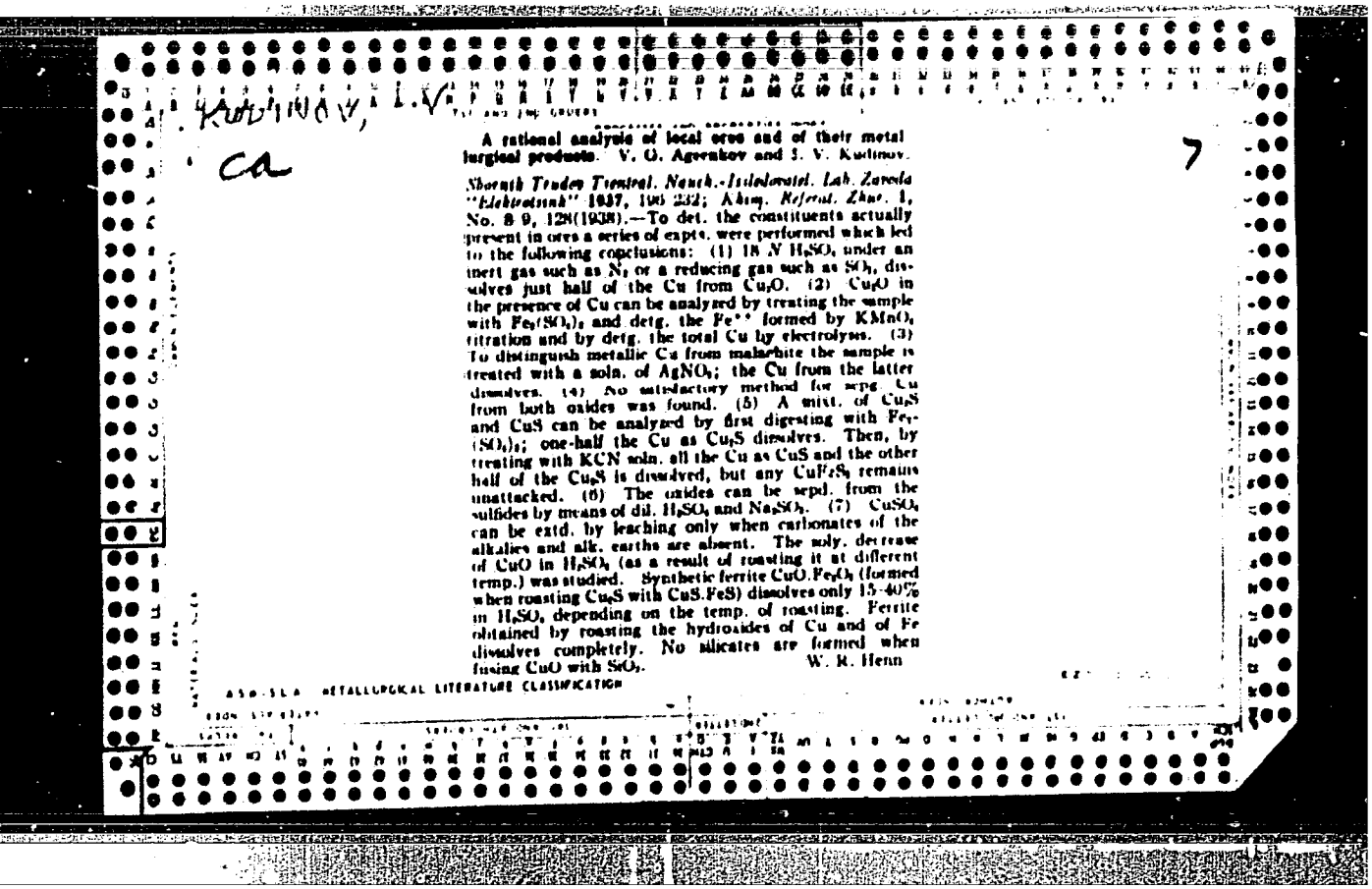
KUDINOV, I.M.

Case of an accessory femir. Khirurgiia no.9:114-115 '61.
(MIRA 15:5)

1. Iz Velikolukskoy oblastnoy bol'nitsy i kliniki khirurgii detskogo vozrasta (zav. - dotsent A.G. Zebrin) Vorozhskogo meditsinskogo instituta.
(FEMUR--ABNORMITIES AND DEFORMITIES)

AR INOV. 1.M.

Efficient bitumen feed from a storage bin. Ann. dor. 28 no.1:28 Ja '65. (MIRA 18:3)



KUDINOV, I. V.

Ca

7

A rational analysis of local ores and of their metallurgical products. V. O. Agevankov and I. V. Kudinov.

Sbornik Trudov Tsentral. Nauch.-Issledovatel. Lab. Zavoda "Elektrostal'" 1937, 196 232; *Khim. Referat. Zhur.* 1, No. 8 9, 128(1938).—To det. the constituents actually present in ores a series of expts. were performed which led to the following conclusions: (1) 18 *N* H_2SO_4 under an inert gas such as N_2 or a reducing gas such as SO_2, dissolves just half of the Cu from Cu_2O. (2) Cu_2O in the presence of Cu can be analyzed by treating the sample with $Fe_2(SO_4)_3$ and detg. the Fe^{++} formed by $KMnO_4$ titration and by detg. the total Cu by electrolysis. (3) To distinguish metallic Cu from malachite the sample is treated with a soln. of $AgNO_3$; the Cu from the latter dissolves. (4) No satisfactory method for sepg. Cu from both oxides was found. (5) A mixt. of Cu_2S and CuS can be analyzed by first digesting with $Fe_2(SO_4)_3$; one-half the Cu as Cu_2S dissolves. Then, by treating with KCN soln. all the Cu as CuS and the other half of the Cu_2S is dissolved, but any $CuFeS_2$ remains unattacked. (6) The oxides can be sepd. from the sulfides by means of dil. H_2SO_4 and Na_2SO_3. (7) $CuSO_4$ can be extd. by leaching only when carbonates of the alkalies and alk. earths are absent. The soly. decrease of CuO in H_2SO_4 (as a result of roasting it at different temp.) was studied. Synthetic ferrite $CuO.Fe_2O_3$ (formed when roasting Cu_2S with CuS.FeS) dissolves only 15–40% in H_2SO_4 depending on the temp. of roasting. Ferrite obtained by roasting the hydroxides of Cu and of Fe dissolves completely. No silicates are formed when fusing CuO with SiO_2.

W. R. Henn

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION

[redacted]

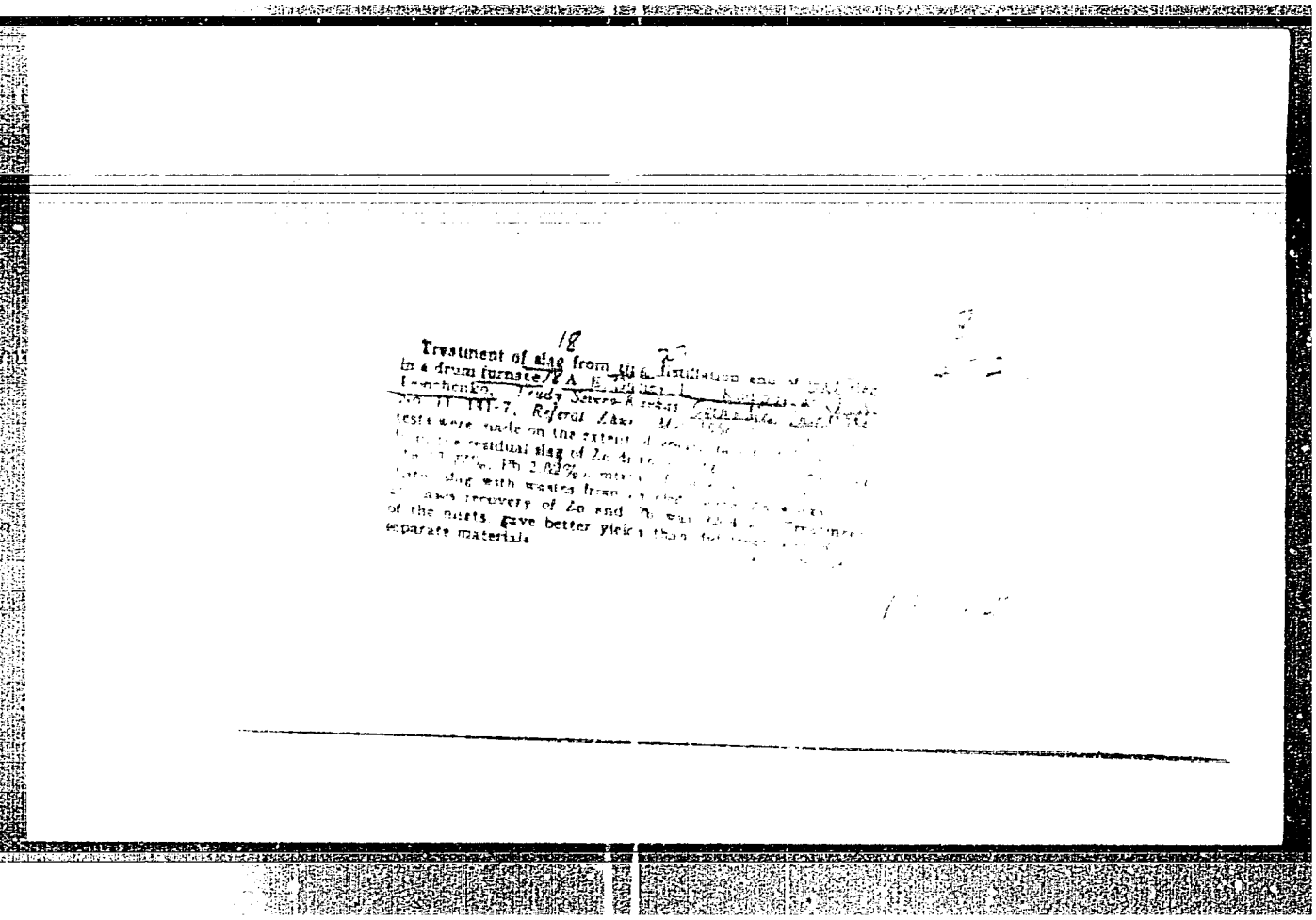
KILINOV, ...

PROCESSES AND PROPERTIES INDEX

The influence of lead on the extraction of zinc during the lixiviation of slag by sulfuric acid solutions. V. G. Aleenkov and I. V. Kudimov. *Sbornik Issled.-Nauch. Issledovatel. Lab. Zavoda "Elektrotsink"* 1937, 29-81; *Khim. Referat. Zhur.* 1, No. 8-9, 58(1938). The ZnO and PbO mixt. was roasted with silica and lixiviated with H₂SO₄ in a glass jar. Zn was detd. by the method of Schott and Low. Some expts. showed that with an increased lixiviation and with an increased acidity all ZnO can be extd. The formation of double silicates of the oxides of Zn and of Pb influenced very little the extn. of Zn with a 4% soln. of H_2SO_4. A mixt. of ZnO and PbO contg. Zn up to 12.5% was roasted in a Pt oven. No difficulties arose when their products were lixiviated. For the study of the influence of Pb silicates on Zn extn. the mono- and the bi-silicates were obtained by fusing silica with PbO, and mixts. of Pb silicates and ZnO were prepd. The reduction of the free ZnO content showed no influence on the extn. of Zn with H_2SO_4. The fusing with Pb monosilicate also had no influence. To det. the possibility of Zn extn. from Fe slags 2 expts. were performed, in one no Fe monosilicates were present, and the other contained 1.0 g. of the Fe monosilicate. The product of the second expt. was lixiviated more easily than that of the first. With Al_2O_3 the Zn extn. did not exceed 95%. The formation of complex aluminosilicates is presumed.

W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Treatment of slag from [illegible] in a drum furnace [illegible]

[illegible] Referat Zakr [illegible]

tests were made on the extent [illegible]

[illegible] residual slag of Zn [illegible]

[illegible] Pb 2.02% [illegible]

[illegible] slag with wastes from [illegible]

[illegible] gave recovery of Zn and [illegible]

of the nuets gave better yields [illegible]

separate materials

KUDINOV, K.A.

Observing the regeneration of tree and shrub vegetation in the temporary flooding zone of Rybinsk Reservoir. Trudy DGZ no.7: 129-136 '61. (MIRA 16:2)
(Rybinsk Reservoir region--Woody plants)
(Regeneration (Botany))

KUDINOV, K.L.

First aid kit for emergency veterinary services. Veterinariia 33 no.9:49-51 S '55. (MLRA 9:10)

1.Direktor Stavropol'skoy krayevoy veterinarnoy poliklinniki.
(Veterinary instruments and apparatus)

KUDINOV, L. V.

"Investigation of linear polyamides with dichroic measurements," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 29 Jan-2 Feb 57, Moscow, Fiber Research Inst.

B-3,084,395

KUDINOV, M.A.

Effect of gibberellin on the germination of woody and herbaceous plant seeds. Bot.; issl.Bel.otd.VBO no.7:65-68 '65. (MIRA 18:12)

KUDINOV, M.A.

Reaction of Norway spruce seeds to the external effects of various factors. Bot. issl. Bel. otd. VBO no.6:246-250 '64. (MIRA 18:7)

KUDINOV, M.A. [Kudzinau, M.A.]

Study of seed quality of introduced trees and shrubs. Vestsi. AN BSSR. Ser. biial. nav. no.1:42-49 '64. (MIRA 17:6)

OSTROVSKIY, I.I., inzh., red.; GRIGOROV, I.I., inzh., red.; MURASHEV, A.G., inzh., red.; PECHURCHIK, S.A., inzh., red.; VEDENKIN, D.P., inzh., red.; KUDINOV, M.P., inzh. red.; YELISEYEVA, Ye.Ye., inzh., red.; PETRUNIN, I.S., inzh., red.; TURIANSKIY, M.A., inzh., red.; POZDNYAKOVA, L.V., inzh., red.; KOKOV, K.V., inzh., red.

[Collections Nos.5, 6, 14, 43 of standard district uniform estimates for construction work] Sborniki No.5, 6, 14, 43 edinykh-raionnykh edinichnykh rastsenok na stroitel'nye raboty. Moskva, Stroiizdat, 1965. 86 p. (MIRA 18:8)

1. Russia (1923- U.S.S.R.) Gosudarstvennyy komitet po delam stroitel'stva. 2. Gosstroy SSSR (for Ostrovskiy, Vedenkin, Kudinov). 3. Nauchno-issledovatel'skiy institut ekonomiki stroitel'stva Gosstroya SSSR (for Grigorov, Murashev, Petrunin, Yeliseyeva, Turianskiy, Pozdnyakova). 4. Gosudarstvennyy institut po proyektirovaniyu predpriyatiy tsvetnoy metallurgii (for Pechurchik). 5. Gosudarstvennyy proyektnyy institut po proyektirovaniyu predpriyatiy tekstil'noy promyshlennosti (for Kokov).

USKOV, A.A.; MIKHAYLOV, O.A.; KRASIVSKIY, S.P.; KHETIK, P.I.; KUDINOV, N.A.; ZASORIN, N.M.; MAKSAREV, Yu.Ye., red.; MAKSIMOV, I.S., red.; GERASIMOVA, Ye.S., tekhn.red.

[Technological progress in the U.S.S.R., 1959-1965] Tekhnicheskii progress v SSSR, 1959-1965. Moskva, Gosplanizdat, 1960. 258 p. (MIRA 13:12)
(Technology)

MILAYKIN, I.F.; KUDINOV, N.M.

Study of the external characteristics of a synchronous welding generator with transistor rectifier excitation. Trudy Ural. politekh. inst. no.124:25-29 '62. (MIRA 16:8)

[redacted], I.F.; KUZNETSOV, N.M.; KAVALIF, V.G.

Excitation of a single-phase synchronous welding generator with an additional winding. Trudy Ural. politekh. inst. no. 138:50-54 '64 (MIRA 19:1)

LUBOCHKIN, Boris Iosifovich, dotsent, kand.tekhn.nauk; LYSENKO, Vsevolod Konstantinovich, dotsent, kand.tekhn.nauk; FAYVUSHEVICH, V.M., retsenzent; KOLESNIKOV, O.G., starshiy prepodavatel', retsenzent; ALEKSANDROV, L.A., red. Prinimal uchastiye KUDINOV, N.N., red.; TIKHONOVA, Ye.A., tekhn.red.

[Marine steam boilers and their operation] Sudovye parovye kotly i ikh ekspluatatsiia. Izd-vo "Morskoi transport," 1960. 590 p. (MIRA 14:4)

1. Zamestitel' nachal'nika Leningradskogo Arkticheskogo uchilishcha (for Fayvushevich). 2. Rostovskoye-na-Donu morekhodnoye uchilishche (for Kolesnikov).
(Boilers, Marine)

LYSENKO, Vsevolod Konstantinovich. Prinimali uchastiye: KUZNETSOV, V.A., dots.; KUDINOV, M.N., inzh.; KRUGLOVA, Ye.M., red. izd-va; KHLOPOVA, L.K., tekhn. red.

[Marine nuclear power plants] Sudovye atomnye silovye ustanovki. Moskva, Izdvo "Morskoi transport," 1961. 153 p. (MIRA 15:3)

(Atomic ships) (Marine engines)

BOOK EXP[illegible]ATION

[illegible] Nikolayevich

[illegible]ear plants on ships [illegible] [illegible] copies
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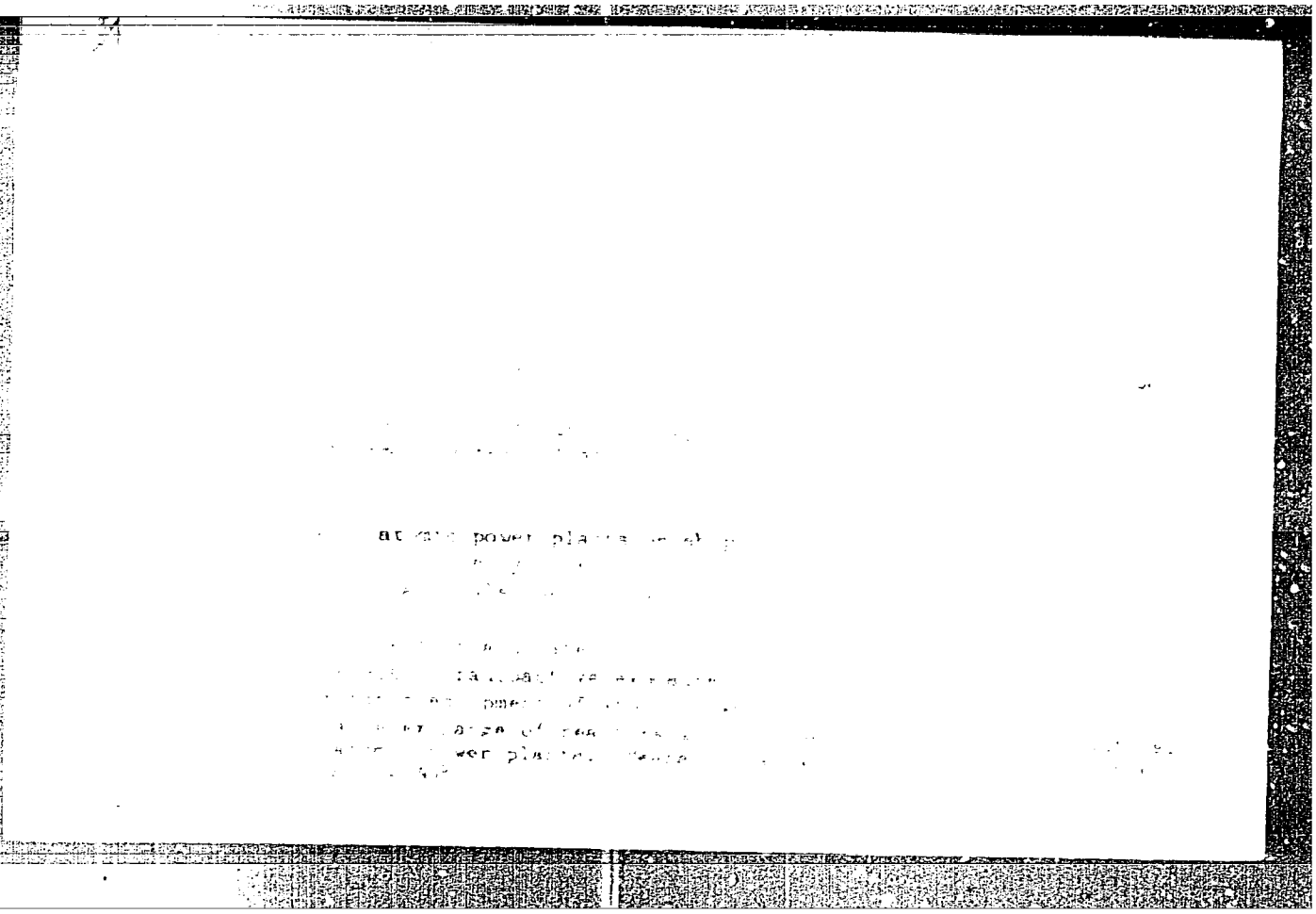

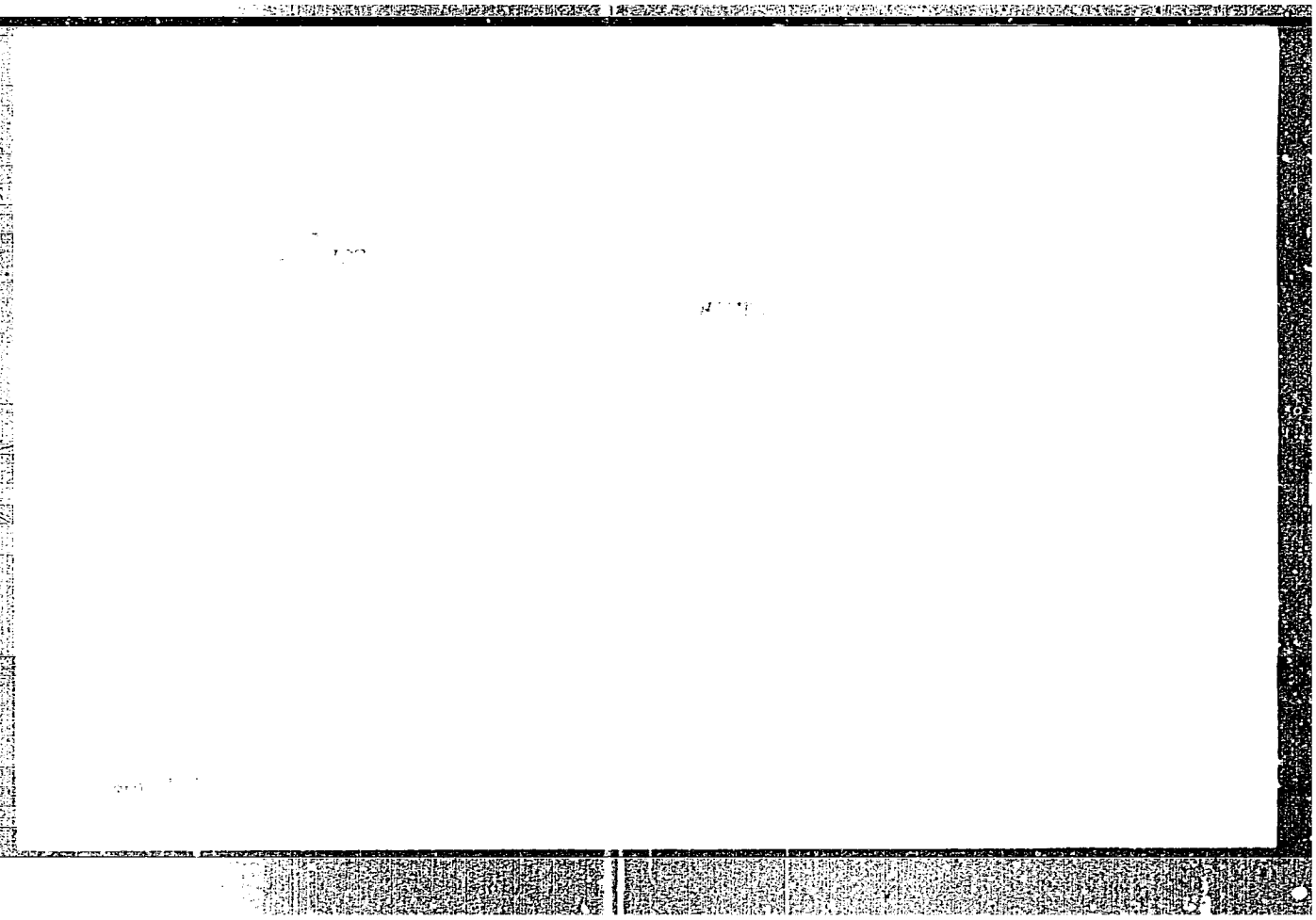

APPROVED FOR RELEASE: 06/19/2000 CIA-RDP86-00513R000827120007-4"

BYKHOVSKIY, Izrail' Adol'fovich. Prinimali uchastiye: AL'KIMOVICH, A.V., inzh.; YEFIMOV, K.A.; KHASIN, A.K., prof., doktor tekhn. nauk, retsenzent; ZNAMEROVSKIY, B.P., kand. tekhn. nauk, retsenzent; KUDINOV, N.N., inzh., retsenzent; MISHKEVICH, G.I., red.; SHISHKOVA, L.M., tekhn. red.

[Atomic ships] Atomnye suda. Pod red. N.N.Kudinova. Leningrad, Gos. soiuznoe izd-vo sudostroit. promyshl., 1961. 310 p. (MIRA 14:9)
(Atomic ships)

KUDINOV, Nikolay Nikolayevich; AL'KIMOVICH, A.V., inzh., retsenzent; VESHKEL'SKIY, S.A., retsenzent; BABIN, Yu.P., nauchn. red.; SMIRNOV, Yu.I., red.

[Marine atomic power plants] Sudovye atomnye energeticheskie ustanovki. Leningrad, Sudostroenie, 1964. 330 p. (MIRA 18:2)

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Laying the foundation for the "1700" Rolling Mill. Prom.stroi. i inzh.soor. 3 no.2:17-21 Mr-Ap '61. (MIRA 15:3)
(Foundations)

KUDINOV, P.A., inzh.

Traction characteristics and efficiency of a wheeled tractor as related to the deviation moment. Trakt. i sel'khozmash. no.10:12-13 O '64. (MIRA 17:12)

1. Ukrainskaya sel'skokhozyaystvennaya akademiya.

BOGDANOVICH, S.Ya.; KUDINOV, P.P.

Gathering and preparing gas for further transportation on the Shebelinka gas field. Gaz. delo no.8:12-18 '64.
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1. Ukrainskiy filial Vsesoyuznogo nauchno-issledovatel'skogo instituta prirodnogo gaza.

PALLADIN, A.V.; KUDINOV, S.A. [Kudinov, S.O.]

Fractionation of soluble proteins of the gray and white matter in the cerebral hemispheres. Ukr. biokhim. zhur. 36 no. 4: 548-558 '64. (MIRA 18:12)

1. Institut biokhimii AN Ukr SSR, Kiyev. Submitted May 8, 1964.

KUDINOV, S. I.

53

137-1-1478D

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 196 (USSR)

AUTHOR: Kudinov, S. I.

TITLE: Corrosion Fatigue Strength of Aluminum Alloys (Korrozionno-ustalostnaya prochnost' alyuminiyevykh splavov)

ABSTRACT: Bibliographic entry on the author's dissertation for the degree of Candidate of Technical Sciences, presented to the Khar'kovsk. politekhn. in-t (Khar'kov Polytechnic Institute) Khar'kov, 1957

ASSOCIATION: Khar'kovsk. politekhn. in-t (Khar'kov Polytechnic Institute), Khar'kov

1. Aluminum alloys—Corrosion fatigue strength

Card 1/1

KUDINOV, V. A.

"Phenomenon of Impact in Layshafts of Machine Tools on Engaging Clutch Couplings." Sub 20 Jun 51, Moscow Machine Tool and Tool Inst imeni I. V. Stalin.

Dissertations presented for science and engineering degrees in Moscow during 1951

SO: Sum. No. 480, 9 May 55

TLUSTY, Jiri [Tlustyy, Irzhi, inzhener, laureat Gosudarstvennoy premii, Chekhoslovatskaya Akademiya nauk]; SPACEK, Ladislav [SHPACHEK, Ladislav, doktor, laureat gosudarstvennoy premii]; SHVARTS, V.V., [translator]; KUDINOV, V.A., kandidat tekhnicheskiy nauk, redaktor; UVAROVA, A.F., tekhnicheskiy redaktor

[Self-induced vibrations in machine tools] Avtokolebaniia v metallo-reshushchikh stankakh. [Supplement: Ladislav Spacek. The theory of coordinate relations for systems with several degrees of freedom. Translated from the Czech] Prilozhenie: Ladislav Shpachek. Teoriia koordinatnoi sviazi dlia sistemy so mnogimi stepeniami svobody. Perevod s cheshskogo V.V.Shvartsa. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 394 p. (MIRA 10:1)
(Machine tools--Vibrations)
(Differential equations)

VEDERNIKOV, A.I.; KALINKINA, E.I.; KUDINOV, V.A.; PROKOPOVICH, A.Ye., red.; IVANOVA, N.A., red.izdatel'stva; MATVEIEVA, Ye.N., tekhn.red.

[Reconditioning automatic one-spindle turret lathes; instructions] Modernizatsiia tokarno-revol'vernykh odnoshpindel'nykh avtomatov; rukovodiashchie materialy. Pod red. A.E.Prokopovicha. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1957. 81 p. (MIRA 10:12)

1. Moscow. Eksperimental'nyy nauchno-issledovatel'skii institut metallorezhushchikh stankov.

(Lathes)

KUDINOV, V. A.

PHASE I BOOK EXPLOITATION 498

Moscow. Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov

Modernizatsiya odnoshpindel'nykh tokarnykh mnogoreztsovykh stankov; rukovodyashchiye materialy (Modernization of Single Spindle Multicutter Lathes; Materials for Guidance) Moscow, Mashgiz, 1957. 118 p. 5,500 copies printed.

Ed. (title page): Prokopovich, A. Ye.; Authors: Gladkov, B. A., Kasatkin, A. G., Kudinov, V. A.; Ed. of Publishing House: Shemshurina, Ye. A.; Tech. Ed.: El'kind, V. D.; Managing Ed. for literature on machining and tool making: Beyzel'man, R. D., Engineer.

PURPOSE: This booklet is intended for production-planning personnel concerned with the exploitation of existing machine tools, and also for designers and engineer-technologists.

COVERAGE: The booklet reviews and analyzes the existing stock of multicutter lathes and points out basic trends in their modernization. The Soviet operating stock of single spindle multicutter lathes comprises about 23,000 units of

Card 1/5

foreign and domestic origin. ENIMS - Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov (Experimental Scientific Research Institute for Metal Cutting Machine Tools) has developed detailed plans and recommendations for modernization (rebuilding) of older machine tools. The book presents examples of calculations and design solutions for modernization of the lathe main drive. Particular attention is given to mechanization and automation of machine tools. Descriptions of devices for reducing auxiliary time and improving working conditions are given, as well as examples of completely automated operation cycles of machine tools. Problems of increasing rigidity and vibration stability of machine tools are discussed. Recommendations for increased productivity of machine tools and for safety techniques are given. The examples cited in the book are based on work done by ENIMS, experience in Soviet industry, and practices in other countries. No personalities are mentioned. There are 32 references, of which 31 are Soviet and 1 English.

Modernization of Single Spindle Multicutter Lathes (Cont.) 498

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AVAILABLE: Library of Congress (TJ 1218.M654)

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8/29/58

Card 5/5

Kudinov, V.A.

PHASE I BOOK EXPLOITATION 188

Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov

Modernizatsiya tokarno-revol'vernykh stankov; rukovodyashchiye materialy (Modernization of Turret Lathes; Instructions) Moscow, Mashgiz, 1957. 170 p. 8,500 copies printed.

AUTHORS: Likht, L.O., Kudinov, V.A., Lapidus, A.C., Azarevich, G.M., Skidal'skiy, M.M., Vedernikov, A.I.; Ed.: Prokopovich, A.Ye.; Ed. of Publishing House: Balandin, A.F.; Tech. Ed.: El'kind, V.D. Managing Ed. for literature on metalworking and tool making [Mashgiz] Beyzel'man, R.D., Engineer.

PURPOSE: The book is intended for engineering and technical personnel in machine-building plants.

COVERAGE: The book presents an analysis of the existing stock of turret lathes and outlines basic trends in their modernization. The following data are included: examples for calculating the main drive and feeds; classification and description of devices for mechanization and automation; description of various devices

Card 1/4

Modernization of Turret Lathes; Instructions 188

for expanding the technological potentialities of machine tools and examples of the modernization of basic machine tools in that category. Problems of increasing vibration stability and the reliability of machine-tool operation are discussed. The share of turret lathes in the Soviet stock of machine tools was 3.7 percent in 1940, 5.7 percent in 1945, 5.0 percent in 1950, and 4.3 percent in 1955. Most of the lathes in use at present were produced during the thirties and forties. As of 1955, there were about 75,000 turret lathes in the Soviet stock of machine tools. Only 2.2 percent of these could machine a piece part up to 80 mm. in diameter, 29.4 percent could machine a piece part up to 65 mm. in diameter, 41.5 percent could machine a piece part up to 40 mm. in diameter, and 16.8 percent could machine a piece part up to 18 mm. in diameter. There are 44 Soviet references. No personalities are mentioned.

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KUDINOV, V.A.

PHASE I BOOK EXPLOITATION 1187

Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov

Modernizatsiya strogal'nykh, dolbezhnykh i protyazhnykh stankov: rukovodyashchiye materialy (Modernization of Planing, Shaping, Slotting, and Broaching Machines; Instructions) Moscow, Mashgiz, 1957. 178 p. 8,500 copies printed.

Authors: Boltukhin,A.K., Morozov, I.I., Kudinov, V.A., Lapidus, A.S., Belov, V.S., Manuylov, L.K., Mushtayev, A.F., Engineers; Ed.: Prokopovich, A.Ye.; Ed. of Publishing House: Shemshurina, Ye.A.; Tech. Ed.: Matveyeva, Ye.N.; Managing Ed. for Literature on Metal Working and Tool Making (Mashgiz): Beyzel'man, R.D., Engineer.

PURPOSE: The book is intended for production engineers and machinists in metal cutting shops.

COVERAGE: The book presents instructions on modernization of planers, shapers, slotters, horizontal broaching machines, and vertical broaching machines for internal and external broaching. A brief review and analysis of the operation of these machine tools is

Card 1/6

Modernization of Planing (Cont.)

given and also the basic and most expedient methods of modernizing them. Examples of design and modernization of the speed drive and of the feed drive, measures for raising the level of mechanization and automation of machine tools are discussed and devices are shown for widening the applicability range of machines and for performing various operations not pertaining to those usually done on these machine tools. The problems of increasing rigidity, resistance to vibrations and the life of these machine tools is discussed. Drawings of basic units of standard plans for modernization of tools as worked out by TsKB Remashtrest (Central Design Bureau of the Trust for the Repair of Metal-cutting Machines) and engineering departments of machine-tool building plants are presented in detail. No personalities are mentioned. There are 16 references, all Soviet.

TABLE OF CONTENTS:

Modernization of Planing (Cont.)

Bibliography

AVAILABLE: Library of Congress (TJ1205.M6)

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KUDINOV, V. A.

BOLTUKHIN, A.K.; STERLIN, S.Z.; MUSHTAYEV, A.F.; MOROZOV, I.I.; KUDINOV, V.A.; MONAKHOV, G.A.; AZAREVICH, G.M.; LAPIDUS, A.S.; PROKOPOVICH, A.Ye., redaktor; RZHAVINSKIY, V.V., redaktor izdatel'stva; TIKHANOV, A.Ya., tekhnicheskiy redaktor

[Modernization of knee and column type milling machines; instructions] Modernizatsiia konsol'no-frezernykh stankov; rukovodiashchie materialy. Pod red. A.E.Prokopovicha. Moskva, Gos. nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1957. 194 p. (MLRA 10:8)

1. Moscow. Eksperimental'nyy nauchno-issledovatel'skiy institut metalloreshushchikh stankov
(Milling machines)

VEYTS, V.L.; CHIRYAYEV, V.I.; KUDINOV, V.A., red.; LAZAREV, Yu.M., tekhn.red.

[Some problems in analyzing the smoothness and displacement sensitivity of feed mechanisms of heavy-duty metal-cutting machines] Nekotorye voprosy raschetov mekhanizmov podachi tiazhelykh metallorezhushchikh stankov na plavnost' i chuvstvitel'nost' peremeshcheniia. Moskva, TSentral'noe biuro tekhn.informatsii, 1958. 30 p. (MIRA 12:3)

1. Moscow. Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov.
(Machine tools)

25(2) PHASE I BOOK EXPLOITATION SOV/1689

Gradusov, N.M., L.O. Likht, E.I. Kalinkina, and V.A. Kudinov

Modernizatsiya tokarnykh mnogoshpindel'nykh avtomatov i poluavtomatov; rukovodyashchiye materialy (Modernization of Automatic and Semi-automatic Multi-spindle Lathes; Instructions) Moscow, Mashgiz, 1958. 118 p. 6,500 copies printed.

Sponsoring Agency: Moscow. Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov.

Ed.: A. Ye. Prokopovich; Tech. Ed.: A. Ya. Tikhanov; Managing Ed. for Literature on Metalworking and Tool Making: R.D. Beyzel'man.

PURPOSE: This book is intended for production workers who work with machine tools, for plant designers and for processing engineers.

COVERAGE: The authors analyze the existing stock of multispindle automatic and semiautomatic lathes and determine the main outlines

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Modernization of Automatic (Cont.) SOV/1689

for their modernization. They describe various devices which broaden the operating potential of automatic lathes and discuss the problem of increasing their rigidity and vibration resistance. No personalities are mentioned. There are 28 references, of which 26 are Soviet, 1 is German and 1 English.

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Modernization of Automatic (Cont.)

AVAILABLE: Library of Congress (TJ1218.M6565)

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8 June 59

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25 (1,7) PHASE I BOOK EXPLOITATION SOV/1688

Gladkov, B. A., V.N. Alekseyev, A.N. Totskiy, V.A. Kudinov, and G.M. Azarevich

Modernizatsiya universal'nykh sverlil'nykh stankov; rukovodyashchiye materialy (Modernization of Universal Drilling Machines; Instructions) Moscow, Mashgiz, 1958. 214 p. 5,000 copies printed.

Sponsoring Agency: Moscow. Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov.

Ed.: A.Ye. Prokopovich; Ed.of Publishing House: N.A. Ivanova; Tech. Eds.: Ye.S. Gerasimova, and A.F. Uvarova; Managing Ed. for Literature on Metal Working and Tool Making: R.D. Beyzel'man, Engineer.

PURPOSE: This book is intended for mechanics and designers engaged in modernizing machine tools.

COVERAGE: A brief description is given of modern universal drilling machines and machines of obsolete design which predominate in the operating stock. Their utilization is analyzed and on the basis of the analysis, the basic requirements for modernizing this type of machine tools are developed. Recommendations and concrete design solutions concerning increase of speed, feed power,

Card 1/4

rigidity, vibration-stability, and life of drilling machines in the operating stock are presented. Special attention is given to problems of reducing auxiliary time. Equipping universal drilling machines with various attachments and auxiliary devices in order to widen their applicability is also described. No personalities are mentioned. There are 42 references of which 38 are Soviet, 3 English, and 1 German.

TABLE OF CONTENTS:

AVAILABLE: Library of Congress (TJ1260.M65)

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SOV/1352

PHASE I BOOK EXPLOITATION

25(5)

Kashepava, M. Ya., Ye. I. Terekhina, V.A. Kudinov, A.S. Lapidus, and G.M. Azarevich

Modernizatsiya universal'nykh gorizontal'no-rastochnykh stankov; rukovodyashchiye materialy (Modernization of Universal Horizontal Boring Machines; Instructions) Moscow, Mashgiz, 1958. 247 p. 7,000 copies printed.

Sponsoring Agency: Moscow. Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov.

Ed.: A. Ye. Prokopovich; Ed. of Publishing House: Ye. A. Shemshurina; Tech. Ed.: V.D. El'kind; Managing Ed. for Literature on Metalworking and Toolmaking (Mashgiz): R.D. Beyzel'man, Engineer.

PURPOSE: This book is intended for mechanics and designers

Card 1/10

Modernization of Universal (Cont.) SOV/1352

engaged in modernization of metal-cutting machine tools.

COVERAGE: The book briefly describes both modern universal horizontal boring machines and those of obsolete design which predominate in existing Soviet machine tool stocks. It analyzes the utilization of these machine tools in order to formulate basic modernization requirements. The book also presents ENIMS recommendations and specific design solutions for increasing the speeds, power, feeds, precision, rigidity, vibration stability, and durability of existing horizontal boring machines. Emphasis is placed on reducing support time by increasing the level of mechanization and facilitating the task of the machine tool operator. No personalities are mentioned. There are 62 references, of which 54 are Soviet, 4 German and 4 English.

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KUDINOV, V A

PHASE I BOOK EXPLOITATION 1136

Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov

Modernizatsiya tokarno-karusel'nykh stankov (Modernization of Vertical Turning Lathes) Moscow, Mashgiz, 1958. 265 p. 6,000 copies printed.

Authors: Gladkov, B.A., Grachev, L.N., Levit, G.A., Lapidus, A.S., Leshchenko, Yu.A., and Kudinov, V.A.; Ed.: Prokopovich, A.Ye.; Ed. of Publishing House: Ivanova, I.A.; Tech. Ed.: Tikhanov, A.Ya.; Managing Ed. for Literature on Metal Working and Tool Making (Mashgiz): Beyzel'man, R.D., Engineer.

PURPOSE: This book is intended for production personnel employing machine tool equipment, for designers of engineering departments, engineers and technicians.

COVERAGE: Vertical turning lathes in an actual operation are reviewed and basic trends and methods of modernizing them are discussed. Design examples and solutions of various design problems in

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modernizing the main drive, feed drives, table rests, and spindles are presented, and various devices for reducing the auxiliary operation time and increasing the versatility of operations are described. The problems of vibration stability of machines and safety measures are also discussed. No personalities are mentioned. There are 69 references, 66 of which are Soviet and 3 English.

TABLE OF CONTENTS:

25 (1,7) PHASE I BOOK EXPLOITATION SOV/1687

Gladkov, B. A., L.N. Grachev, P.M. Shpigel'shteyn, V.A. Kudinov, A.S. Lapidus, G.M. Azarevich, Yu. A. Leshchenko

Modernizatsiya tokarnykh stankov; rukovodyashchiye materialy (Modernization of Lathes; Instructions) Moscow, Mashgiz, 1958. 286 p. 6,800 copies printed.

Sponsoring Agency: Moscow. Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov.

Ed.: A.Ye. Prokopovich; Ed. of Publishing House: N.A. Ivanova; Tech. Ed.: Ye. N. Matveyeva; Managing Ed. for Literature on Metal Working and Tool Making: R.D. Beyzel'man, Engineer.

PURPOSE: This book is intended for manufacturing personnel dealing with the operation of machine tools, and for designers in plant machine-shops, and engineer-technologists.

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Modernization of Lathes; Instructions SOV/1687

COVERAGE: The book presents an analysis of the existing operating stock of lathes and establishes basic trends in modernization. It includes examples of designing and design solutions related to modernization of the main drive and feed drive, classification and description of various attachments for reducing auxiliary time and easing the work of an operator, description of various devices for widening the range applicability of machine tools, examples of modernizing the basic tool types of the engine-lathe group, and discusses problems concerning improvement of vibration-stability and reliability in the operation of machine tools and how to prolong their life. No personalities are mentioned. There are 35 references, all Soviet.

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KUDINOV, V.A.; YAO LI-PIN [Yao Li-p'ing]

Vibration damping in machining with bracket boring bars. Stan.i instr. 29 no.12:9-12 D '58. (MIRA 11:12)
(Drilling and boring machinery--Vibration)

VEYTS, Vladimir L'vovich, inzh.; DONDOSHANSKIY, Vladimir Kirillovich, inzh.; CHIRYAYEV, Vyacheslav Ivanovich, inzh.; KUDINOV, V.A., kand.tekhn.nauk, retsenzent; BARGER, I.B., kand.tekhn.nauk, red.; VASIL'YEVA, V.P., red.izd-va; SPERANSKAYA, O.V., tekhn.red.

[Forced vibrations in metal milling machines; design of parts and units] Vynuzhdennye kolebaniia v metallorezhushchikh stankakh; raschet detalei i uzlov. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit.lit-ry, 1959. 287 p. (MIRA 12:6)
(Machine tools--Vibration)

[illegible]ov, [illegible]

"[illegible] theory of [illegible]fluid [illegible]" p. 161

[illegible] Fri[illegible] (Tr[illegible] Friction. Friction Materials) Moscow, Izd-vo AN [illegible], [illegible] Errata slip inserted. [illegible],500 copies printed. (Series: [illegible], v. [illegible])

[illegible] Akademiya nauk SSSR. Institut [illegible]. Resp. Ed.: I. V. Kragel'skiy, Doctor of Technical Sciences, [illegible] of Publishing House: K. I. [illegible]; Tech. Ed.: [illegible]

[illegible] collection published by the Institute [illegible] (Institute of Science of Machines, Academy of Sciences [illegible]) contains [illegible] at the III [illegible] konferentsiya [illegible] (Third All-Union Conference on Friction [illegible]

Kudinov, V. A.

"Temperature Problem of Friction and the Phenomenon of the Formation of an Excrescence in the Case of Cutting and Friction" p. 178

Sukhoye i granichnoye treniye. Friktsionnyye materialy (Dry and Boundary Friction. Friction Materials) Moscow, Izd-vo AN SSSR, 1960. 302 p. Errata slip inserted. 3,500 copies printed. (Series: Its: Trudy, v. 2)

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Resp. Ed.: I. V. Kragel'skiy, Doctor of Technical Sciences, Professor; Ed. of Publishing House: K. I. Grigorash; Tech. Ed.: S. G. Tikhomirova.

The collection published by the Institut mashinovedeniya, AN SSSR (Institute of Science of Machines, Academy of Sciences USSR) contains papers presented at the III Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh (Third All-Union Conference on Friction and Wear in Machines, April 9-15, 1958.

Kudinov, V. A.

"On Some Laws of Semifluid Friction (Running-In, Seizing, Steadiness of Motion)" p. 161

Sukhoye i granichnoye treniye. Friktsionnyye materialy (Dry and Boundary Friction. Friction Materials) Moscow, Izd-vo AN SSSR, 1960. 302 p. Errata slip inserted. 3,500 copies printed. (Series: Its: Trudy, v. 2)

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Resp. Ed.: I. V. Kragel'skiy, Doctor of Technical Sciences, Professor; Ed. of Publishing House: K. I. Grigorash; Tech. Ed.: S. G. Tikhomirova.

The collection published by the Institut mashinovedeniya, AN SSSR (Institute of Science of Machines, Academy of Sciences USSR) contains papers presented at the III Vsesoyuznaya konferentsiya po treniyu i iznosu v mashinakh (Third All-Union Conference on Friction and Wear in Machines, April 9-15, 1958.

RYZHKOV, Dmitriy Ivanovich; KUDINOV, V.A., kand.tekhn.nauk, retsenzent; KLUSHIN, M.I., dotsent, kand.tekhn.nauk, red.; MOROZOVA, M.N., red.izd-va; MIL'KIND, V.D., tekhn.red.; GORDEYEVA, L.P., tekhn.red.

[Vibrations due to metal cutting and methods for their elimination] Vibratsii pri rezanii metallov i metody ikh ustraneniia. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1961. 171 p. (MIRA 14:4)

(Metal cutting--Vibration)

S/121/61/000/001/006/009
D040/D113

AUTHOR: Kudinov, V. A.

TITLE: The effect of friction in mobile connections on damping of forced oscillations

PERIODICAL: Stanki i instrument, no. 1, 1961, 31-35

TEXT: The article contains a theoretical analysis of the damping effect of friction on mobile connections in machine tools (tables or saddles on ways, spindles in bearings, etc.). Only progressive motion is analyzed (the analysis may also be applied to rotary motion). The main purpose of the study is to evaluate the effect of Coulomb friction. The problem is simplified by considering the system as stable, omitting the state in which jumps are possible under the effect of external forces, i.e. assuming that the machine tool frame is rigid and massive, and that the mobile element (table, tailstock, etc.) is rigid and has three degrees of freedom. The following different applications of the disturbing force are analyzed: (1) force acting in the same direction as the motion of the mobile element, (2) across it, and (3) upwards. In practice, these three different applications of the

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The effect of friction ....

disturbing force are more often combined; the author reviews these combinations. It is stated that the data of this analysis closely coincide with available empirical data. The following conclusions are drawn: (1) Unlike friction in immobile connections, Coulomb friction does not damp oscillations in the direction of the motion of the machine element and even amplifies the effect of external disturbing forces (with the exception of climb milling where Coulomb friction reduces the amplitude of the disturbing force during cutting). Consequently, the use of rolling ways would considerably improve the performance of the system under the effect of disturbing forces. (2) Oscillations at right angles to the set motion of elements are damped by Coulomb friction according to the viscous resistance law. This peculiarity may be utilized for damping oscillations. (3) It is necessary to reduce Coulomb friction in view of its effect on the performance of systems under the effect of external forces. This was also concluded in a previous analysis of stability and accuracy of feed systems. There are 5 figures and 3 Soviet references.

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S/121/61/000/005/004/005
D040/D112

AUTHORS: Kudinov, V.A., and Sukhanov, E.S.

TITLE: The effect of the cutter edge shape on vibration in machine tools

PERIODICAL: Stanki i instrument, no. 5, 1961, 24-25

TEXT: The article gives the results of an investigation at ENIMS on the effect of the cutting edge shape on chatter. The experiments were made with different cutting edges (shown in Figure) with a 1A62 (1A62) thread cutting lathe and blanks from "45" steel 115 mm in diameter and 550 mm length, attached by one end in a three-jaw chuck, while the other thrust against a rotating center. The cutters were tipped with P18 (R18) steel and provided with an 8° clearance and 8° auxiliary clearance, and 45° auxiliary angle in plane view. The main top rake and angle were zero, i.e. the cutter's top was made flat, so that all the cutting edges were in a plane passing through the axis of the machine centers. The chatter resistance was 60-75% higher with a two-step edge and 125-140% higher with a three-step edge. The optimum c dimension proved to be 1 - 2 mm for

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The effect of the cutter edge shape...

cutters with a main plane angle 20 - 40°, and 2 - 4 mm for cutters with a 40 - 70° angle. The formula used for calculating the length of the cutting edge steps II and III ($\int$ in the figure) was:

$$a = \frac{Kt_{lim} + c \cos\varphi}{\sin\varphi},$$

where K is a coefficient = 0.7 to 0.8; t_{lim} - the cutting depth limit; c - dimension shown in figure; φ - main plane angle (was 45° in experiments). The step I length was chosen for a 6 mm cutting depth. The edge tip radius of all cutters was 0.5 mm. The durability of the stepped cutting edges was not below normal, for each step works as an independent cutter with its main and auxiliary angles. The chatter decreasing effect of concave and convex cutting edges was the same as of stepped edges (varied between 20 and 140% lower chatter, depending on the point of contact between the cutting edge and workpiece and on the shape of the cutting edge). The concave shape was more effective than the convex, and both proved equivalent to the stepped, but the stepped shape is simpler to produce and takes less time to regrind. Grooves on the front and rear edge side had only slight chatter-damping effect (12 and 5% respectively) and affected the cutting life because of

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curling and jamming of the chips in the grooves. The conclusion is that if chatter starts in cutting, it must be eliminated by using cutters with a stepped cutting edge, without changing the cutting speed and depth. There is 1 figure.

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KUDINOV, V.A.; NIKITIN, B.V.

Calculating the frequency characteristics of an elastic mechanical system. Inz.-fiz. zhur. 4 no.12:83-89 D '61. (MIRA 14:11)

1. Eksperimental'nyy nauchno-issledovatel'skiy institut metallorezhushchikh stankov, Moskva.

(Mechanics)
(Frequencies of oscillating systems)

KUDINOV, V.A.; KEDROV, S.S.; YERMAKOV, G.A.

Vibration of double-sided vertical boring and turning lathes.
Stan.i instr. 32 no.6:17-18 Je '61. (MIRA 14:6)
(Lathes—Vibration)

KUDINOV, V. A.

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Kragel'skiy, Igor' Viktorovich, Doctor of Technical Sciences, Professor

Treniye i iznos (Friction and Wear). Moscow, Mashgiz, 1962. 382 p. Errata slip inserted. 11,000 copies printed.

Reviewer: D. N. Garkunov, Candidate of Technical Sciences; Ed.: V. I. Kumanin, Engineer; Ed. of Publishing House: V. V. Bystritskaya; Tech. Eds.: A. Ya. Tikhanov and T. F. Sokolova; Managing Ed. for Literature on General Engineering: A. P. Kozlov, Engineer.

PURPOSE: This book is intended for scientific workers and engineers engaged in the development of friction and antifriction materials and for designers and specialists in the operation and repair of machines.

COVERAGE: The book deals with the analysis of various types of friction and wear and with calculations relating to certain processes characterizing them. Methods of testing for friction and wear are

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reviewed, and basic data on friction and antifriction materials discussed. The author acknowledges the assistance and cooperation of: V. A. Kudinov; G. I. Troyanovskaya, Candidate of Technical Sciences, who participated in writing Ch. III and Ch. X; N. B. Demkin, Candidate of Technical Sciences, who participated in writing Ch. II; Yu. I. Kosterin, Candidate of Technical Sciences, who participated in writing Ch. VII; and V. A. Kudinov, Candidate of Technical Sciences, who wrote Ch. IX. Each chapter is accompanied by references, mostly Soviet.

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